



Canadian Standards Association  
Mississauga, Ontario  
**To the Part I Committee**

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**Submitted by:** Joseph Neu of Electro-Federation Canada, 58 Explorer Drive, Suite 200, Mississauga, Ontario, L4W 5K9, Tel: (905) 602-8877 X 232, Fax: (905) 602-5686 on October 10, 2002.

**Proposal:** Amend Rule 46-204 by adding the following:

*“The emergency lighting supply for a given area supplied by a local lighting panel will be automatically actuated upon failure of the power supply to the normal lighting in that area covered by that local lighting panel.”*

**Reasons for Request:**

Currently, the requirements of the CE Code Part I Section 46-304 (4) require that *“Unit equipment shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the area covered by that unit equipment.”*

This Section implies that coverage will be provided in the event of a local failure within a building that affects the lighting in that area. This is a very logical requirement.

**Industry Concern:**

When a generator or other centralized device provides the emergency lighting source for a building, this requirement is not in place and it is acceptable that emergency lighting is only provided when power fails to the entire building and triggers the central unit.

**Safety Issue:**

There have been many very dangerous situations where a portion of a high rise building has lost power and lighting but no emergency power has been provided because power did not fail at the main entrance. This leads to an illogical situation where the public may be better protected in a smaller building using individual units than in a large complex.

In Europe this issue has been addressed by a recent CENELEC standard, which essentially states in Section 4 that any local failure will cause emergency lighting to be provided, and is not dependent upon the nature of the emergency lighting source.

The EEMAC Lighting Section and the Emergency Lighting and Exit Sign Committee propose that we take the necessary actions to recommend to the authorities responsible for public safety that a comparable requirement be placed in the Canadian Electrical Code.

#### **Chair's Comments:**

Although I greatly appreciate the industry concerns and fully support the intent of the proposed amendment, I'd like to share with you my reservations regarding this proposal not only as Chair of Section 46 S/C but also as Chair of the CEC/NBC Liaison S/C.

1) Scope of Section 46 covers installation, operation and maintenance of emergency systems and a unit equipment for emergency lighting to provide alternate power supply in the event of failure of the normal power source, only where such emergency equipment and emergency lighting is required by the NBC.

2) Rule 46-204 of the CEC regulates only requirements for emergency systems such as central battery units and emergency generators where a transfer of power from a normal supply to the emergency supply is done via an automatic transfer equipment. (see rule 46-200). Thus the intended amendment to Rule 46-204 - to deal with emergency lighting supply, appears to be out of place in this rule.

3) Perhaps, the best place to address the industry concerns is to propose the amendment to Article 3.2.7.4. of the NBC - to make it consistent with similar provisions of Article 9.9.11.3.(3) of the NBC. The latter Article requires automatic actuation of emergency lighting in the area required to have emergency lighting, when the electric lighting in the affected area is interrupted. Article 3.2.7.4., however mandates actuation to the emergency power to the emergency lighting required in a building only when the normal power supply to the building is interrupted.

This inconsistency in the NBC had been noted for quite some time. In fact, I have written a series of articles in the "Electrical Business" on this matter in 1992 and had also made a formal proposal to the NRC – to amend Article 3.2.7.4. of the NBC accordingly.

As you can see, the requirement for an emergency lighting to operate in the event of a power failure is a performance requirement and such a requirement should be placed in the NBC rather than into the CEC. It may be argued, however, that Rule 46-304(4) is also a performance requirement and yet, it exists in the CE Code. The reason that Rule 46-304(4) had been placed in the CE Code, is due to the fact that the supply connections to such unit equipment are provided from a receptacle fed from the circuit supplying normal lighting in the area where such unit equipment is installed, and if remote lamps located on other floors, are fed from such a unit equipment, then this requirement will mandate interlocks with normal lighting on the floors, where such remote lamps are installed.

In cases of emergency generators supplying emergency panels containing all sorts of emergency loads such as (elevators, pressurization and smoke venting equipment, fire alarm systems, exit signs, etc.), these generators will be activated only when absence of voltage on the normal supply to the transfer switch is sensed by a voltage relay and this relay will give an order to the generator to start, and when the generator reaches its characteristics (voltage and frequency), this relay will

give an order to the transfer switch to transfer power supply from a normal source to the emergency.

I appreciate that if a feeder supplying the lighting panelboard, has failed due to the fault in this feeder, the generator would not start as the transfer switch may not see this situation as the failure of normal power to this transfer switch. However, it is a good design practice - to supply lighting on a floor area from different panelboards in order to ensure that the floor area is not left in a complete darkness.

Nevertheless, the essence of the submitted proposal (I wrote my comment to the submitter) could be modified by adding a new rule (Rule 46-209) to read:

**"46-209 Operation of Emergency lighting.** Where emergency lighting required in a building by the National Building Code of Canada is provided by a central standby storage battery or by an emergency generator, the emergency lighting shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the affected area."

However, please note that the proposed requirement will make installations extremely expensive by forcing numerous interlocks with emergency generators or central standby units, or will force designers to ignore emergency generators and to use only unit equipment for emergency lighting on each floor and in each exit stair.

I worded this rule similarly to the wording of 9.9.11.3. of the NBC and similarly to the wording of Rule 46-304(4). I prefer to stay away from tying this requirement to the lighting panelboard and make it more objective and performance based criteria.

I'd also appreciate if the submitter could provide Rick with a detailed supporting information and reasons for the request as mandated by Appendix C of the CE Code. (See Annex B).

The submitter is invited to participate in the Subcommittee deliberations by returning a reply form to the CSA Project Manager.

**Subcommittee Deliberations:** Seven Subcommittee members replied to the proposal. All respondents supported Chair's comments.

They felt that the essence of this proposal should be covered in the NBC and that the proposal submitted to the NBC by the CEC/NBC Liaison S/C would be sufficient to deal with the expressed concern.

The Subcommittee members also felt that the submission lacks proper substantiation and the wording of the proposal is not clear. Chair commented that he contacted the original submitter with the request to provide his feedback on the alternate wording proposed by the Chair. Chair indicated that no information was received from the submitter and that the submitter was advised that absence of a feedback may result in rejection of the proposal.

**Subcommittee Recommendation:** To reject the proposal and to close this subject.